REMARKS

The Office Action dated October 4, 2006 has been received and carefully noted. The period for response having been extended from January 4, 2007 to February 4, 2007 by the attached Petition for Extension of Time, the above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 10, 19 and 28-30 were amended to more particularly point out the subject matter which is the invention. No new matter is added and no new issues are raised which require further search and/or consideration. Claims 1-19 and 21-30 are submitted for consideration.

Claims 1-3, 10-13, 19, 21 and 27-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,631,122 to Arunachalam (hereinafter Arunachalam) in view of U.S. Patent No. 6,657,962 to Barri (hereinafter Barri) and further in view of U.S. Patent No. 6,404,738 to Reininger (hereinafter Reininger). According to the Office Action, Arunachalam teaches all of the elements of claims 1-3, 10-3, 19, 21 and 27-30 except for disclosing that the adjusting includes resource usage calculation. Thus, the Office Action combined the teachings of Arunachalam with Barri and Reininger to yield all of the elements of claims 1-3, 10-13, 19, 21 and 27-30. The rejection is traversed as being based on references that neither teach nor suggest the combination of elements recited in claims 1-3, 10-13, 19, 21 and 27-30.

Claim 1, upon which claims 2-9 depend, recites a method including determining an operating condition at a first router in a differentiated service network having a

plurality of routers based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers. The method also includes propagating an indication of the operating condition at the first router to a second router. A signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The method further includes adjusting at least one parameter of constraint of incoming traffic flow based on the indication, wherein the adjusting includes renegotiating the at least one parameter of constraint or providing a recommendation based on the at least one parameter of constraint. The adjusting includes performing parameter mapping and resource usage calculation.

Claim 10, upon which claims 11-18 depend, recites a method including receiving, at a second router, an indication of an operating condition at a first router in a differentiated service network having a plurality of routers. The operating condition is determined in the first router based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers and wherein a signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The method also includes adjusting at least one parameter of a constraint of incoming traffic flow based on the indication of the operating condition. The adjusting includes renegotiating the at least one parameter of constraint or providing a

recommendation based on the at least one parameter of constraint. The adjusting includes performing parameter mapping and resource usage calculation.

Claim 19, upon which claims 21-27 depend recites a differentiated service network including a first router and a second router coupled to the first router. The first router being associated with a first entity to determine an operating condition at the first router based on evaluation of incoming packets and computation of an effective load by each of a plurality of routers. The first entity associated with the first router propagates an indication of the operating condition at the first router device to the second router, wherein a signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The network includes an adjusting unit configured to adjust at least one parameter of constraint of incoming traffic flow based on the indication, wherein the adjusting unit is configured to renegotiate renegotiating the at least one parameter of constraint or provide a recommendation based on the at least one parameter of constraint. The adjusting unit is configured to perform parameter mapping and resource usage calculation.

Claim 28 recites an apparatus including determining means for determining an operating condition at a first router in a differentiated service network having a plurality of routers based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers. The apparatus also includes propagating means for propagating an indication of the operating condition at the first router to a second router,

wherein a signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The apparatus further includes adjusting means for adjusting at least one parameter of constraint of incoming traffic flow based on the indication, wherein the adjusting means includes means for renegotiating the at least one parameter of constraint or providing a recommendation based on the at least one parameter of constraint and wherein the adjusting includes performing parameter mapping and resource usage calculation.

Claim 29 recites a second router including receiving means for receiving, at the second router, an indication of an operating condition at a first router, wherein the operating condition is determined in the first router based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers and wherein a signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The second router also includes adjusting means for adjusting at least one parameter of a constraint of incoming traffic flow based on the indication of the operating condition, wherein the adjusting means includes means for renegotiating the at least one parameter of constraint or providing a recommendation based on the at least one parameter of constraint. The adjusting includes performing parameter mapping and resource usage calculation.

Claim 30 recites a first router including coupling means for coupling the first router to a second router, the first router being associated with a first entity to determine an operating condition at the first router based on evaluation of incoming packets and computation of an effective load by each of a plurality of routers. The first entity associated with the first router propagates an indication of the operating condition at the first router device to the second router. A signal indicating at least network traffic status is sent from each of the plurality of routers to a bandwidth broker, the signal of the operating condition of the first router being reflected in the indication. The second router includes means adjusting at least one parameter of constraint of incoming traffic flow based on the indication, wherein the adjusting means includes means for renegotiating the at least one parameter of constraint or providing a recommendation based on the at least one parameter of constraint and, the adjusting means includes means for performing parameter mapping and resource usage calculation.

As outlined below, Applicant submits that the cited references of Arunachalam, Barri and Reininger do not teach or suggest the elements of claims 1-3, 10-13, 19, 21 and 27-30.

Arunachalam discloses a wireless network with an IP core network that is connected to collector networks which includes various types of services and are connected to end terminals. Col. 3, lines 51-67 and Figure 1. Arunachalam also discloses an IP QoS architecture with multiple QoS managers connected to respective IP services in distinct access networks. The architecture also includes a QoS agent which is

a slave device to the QoS manager. The agent configures and enforces policies within the network devices flow handling mechanism. The primary function of the agent is enforcing flow classification, marking, mapping and treatment policies. Col. 4, lines 1-42. The QoS agent is also advantageous in wireless systems in guiding a Radio Resource Manager (RRM) in allocating radio channels (each with different levels of QoS) and software blocks for link layer Automatic Request for Retransmission (ARQ) and power control algorithms. A wireless agent in the system is built on the IP QoS agent structure including radio link dependent functions. Col. 4, line 50-Col. 5, line 52 and Figures 2-5.

Arunachalam also discloses that QoS requirements should be met over an entire network between a source and destination. QoS is specified in an IP packet by marking a certain byte. An IP packet from the base station to a mobile device with a specified QoS is routed to a suitable MAC resource and physical channel resource so that its QoS requirements are met by using a unique identifier for each flow. QoS parameters may be provisioned on a per-flow basis as the flow traverses the network or flows may be aggregated into services classes with associated behavior for each class. QoS processing functions are divided into QoS mapping and implementation functions to change the underlying QoS provisioning mechanism/resources without changing the service call definition. Col. 6, lines 1-65. When a packet arrives from a wired network to a wireless network, a QoS mapping function extracts the type of service byte that indicates the QoS desired by the IP packet and send the byte to the wireless QoS agent. The wireless QoS agent examines the byte, maps it to the class of service, assigns a tag to the flow and

returns the tag to the mapping function and RRM for later IP packets of the same flow. The RRM decides on the MAC layer and physical layer resources to be allocated to a wireless service class. A scheduler schedules all incoming frames from the MAC layer based on weights assigned by the wireless QoS agent. The scheduling algorithm may be a simple priority queuing or a weighted fair packet queuing algorithm. If the weighted fair packet queuing is used, the wireless QoS agent adjusts the weights based on the knowledge of the precedence and bandwidth allocation for the traffic classes scheduled. Col. 7, line 54-Col. 10, line 35 and Figure 8.

Barri discloses a method and system using congestion indicators within an ingress system, egress system and a switch fabric in conjunction with a coarse adjustment system and fine adjustment system within the ingress device and the egress device to intelligently manage the system. See at least the Abstract.

Reininger discloses that a QoS request is sent from a client application to a server application. For example, in figure 5 of Reininger, the client application seeks additional bandwidth in the QoS request. In another example as illustrated in figure 6 of Reininger, a client terminal requests a video title from a remote server. At the connection setup, the client application requests the desired QoS from the server and a network. The quality requested from the network is a soft-QoS specification, characterized as a satisfaction index and a softness profile. While a connection is in progress, the application can renegotiate its QoS requirements. At the server side, the terminal QoS controller computes and renegotiates the bit-rate necessary to maintain a desired target quality. The

renegotiation requests are sent to soft-QoS controllers on the network's switches. While the renegotiations are being processed, and during network congestion, a variable bit rate source uses rate control to scale its bit rate and quality to ensure that the generated traffic conforms to the allocated bandwidth. See at least Col. 8, lines 2 1-58 of Reininger.

Figures 7-9 of Reininger show conceptual implementation of systems detailing various network mechanisms for dynamic QoS support. In figure 7, a client is connected to a server across an ATM network through ATM switches that are also connected to soft-QoS controllers. Setup and modification requests are made by the server to the network. Newly established connections and modification availability are received by the server. See Col. 8, line 63-Col. 9, line 3 of Reininger.

Applicants submit that the combination of Arunachalam, Reininger and Barri fail to disclose or suggest the combination of elements recited in claims 1-3, 10-13, 19, 21 and 27-30. Each of independent claims 1, 10, 19 and 28-30, in part, recites determining an operating condition at a first router in a differentiated service network having a plurality of routers based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers and propagating an indication of the operating condition at the first router to a second router. Claims 1-3, 10-13, 19, 21 and 27-30 also recite a signal indicating at least network status traffic is sent from each of the plurality of routers to a bandwidth broker and wherein the signal of the operating condition of the first router is reflected in the indication, as proposed in the enclosed amended claims. According to the present invention, all of the routers calculate the

network load and this information is sent to the edge (second) router(s) for faster reaction time. In the present invention, coordination of the edge router(s) behavior takes place in the bandwidth broker. Page 14, line 19 – page 16, line 10, of the current specification teaches that all of the routers calculate the network load and that coordination of the edge router(s) behavior takes place in the bandwidth broker.

Arunachalam, Reininger and Barri, on the other hand, do teach or suggest determining an operating condition at a first router in a differentiated service network having a plurality of routers based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers and propagating an indication of the operating condition at the first router to a second router, recited in the presently pending claims. The Office Action cited a section in Arunachalam that discusses QoS requirement or a message/packet. In the present invention as recited in the pending claims, on the other hand, the operation condition is a condition pertaining to the router and not to a QoS requirement, as disclosed in Arunachalam.

Arunachalam, Reininger and Barri also do teach or suggest wherein a signal indicating at least network status traffic is sent from each of the plurality of routers to a bandwidth broker and wherein the signal of the operating condition of the first router is reflected in the indication, as recited in the presently pending claims. Col. 5, lines 40-43 of Arunachalam, as cited in the Office Action, also does not teach or suggest propagating an indication of the operating condition at the first router to a second router, recited in the presently pending claims. The cited section of Arunachalam is related to opposite-

direction traffic where the QoS manager/Bandwidth Broker issues directives to the other routers. In contrast, the pending claims recite propagating an indication of the operating condition at the first router to a second router which refers to the routers reporting the prevailing operation conditions toward the bandwidth broker. Therefore, Applicants assert that the rejection under 35 U.S.C. 103(a) should be withdrawn because neither Arunachalam, Reininger nor Barri, whether taken singly or combined, teaches or suggests each feature of claims 1, 10, 19 and 28-20 and hence, dependent claims 2-3, 11-13 and 21 thereon.

Claims 4-7, 9, 14-18 and 22-26 were rejected under 35 U.S.C. 103(a) as being unpatentable over Arunachalam in view of Barri and U.S. Patent No. 6,542,466 to Pashtan (hereinafter Pashtan). According to the Office Action, Arunachalam and Barri teach all of the elements of claims 4-7, 9, 14-18 and 22-26 except for disclosing that the operating condition includes a status of stability. Thus, the Office Action combined the teachings of Pashtan with Arunachalam and Barri to yield all of the elements of claims 4-7, 9, 14-18 and 22-26. The rejection is traversed as being based on references that neither teach or suggest the combination of features recited in claims 1, 10 and 19, upon which claims 4-7, 9, 14-18 and 22-26 depend.

Claims 1, 10 and 19 have been discussed above. Arunachalam and Barri have also been discussed above. Pashtan discloses a wireless QoS agent for an IP network which is coupled to the network by coupling means. The coupling means includes

communications means for transfer of information between the agent and a QoS manager.

Pashtan does not cure any of the deficiencies of Arunachalam and Barri, as outlined above. Specifically, Pashtan does not teach or suggest determining an operating condition at a first router in a differentiated service network having a plurality of routers based on evaluation of incoming packets and computation of an effective load by each of the plurality of routers and propagating an indication of the operating condition at the first router to a second router, wherein a signal indicating at least network status traffic is sent from each of the plurality of routers to a bandwidth broker and wherein the signal of the operating condition of the first router is reflected in the indication, as recited in claims 1, 10 and 19, upon which claims 4-7, 9, 14-18 and 22-26 depend. Therefore, Applicants assert that the rejection under 35 U.S.C. 103(a) should be withdrawn because neither Arunachalam, Pashtan nor Barri, whether taken singly or combined, teaches or suggests each feature of claims 1, 10 and 19 and hence, dependent claims 4-7, 9, 14-18 and 22-26 thereon.

As noted previously, claims 1-19 and 21-30 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-19 and 21-30 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Enclosures: Petition for Extension of Time
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